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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/589,055
Filing Date: June 07, 2000
Appellant(s): RASMUSSEN ET AL.

Danny Williams
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/17/2005.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is incorrect. The 35 U.S.C. 112 rejection of claims 16-37 and 53-54 has been withdrawn based on appellant's argument/admission that "immersing" and "submerging" imply identical rates of immersion and/or submersion.

(4) Status of Amendments

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of the claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is incorrect. The 35 U.S.C. 112 rejection of claims 16-37 and 53-54 has been withdrawn based on appellant's argument/admission that "immersing" and "submerging" imply identical rates of immersion and/or submersion.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Appendix

There is no separate Evidence Appendix for this appeal.

(9) Related Proceedings Appendix

There is no separate Related Proceedings Appendix for this appeal.

(10) Prior Art of Record

3763051	SPEIGEL	10-1973
6214419	DINH	4-2001
4293586	UNNAI	10-1981
5723070	KIM	3-1998
5200233	MOHACSI	4-1993
5569485	DAHLQUIST	10-1996
4365184	HIGTON	12-1982
4983847	BRYAN	1-1991
3617743	RABATIN	11-1971

Dictionary Definition of the word "substrate", The American Heritage Dictionary of the English Language, Fourth Edition 2000.

(11) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102/103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over USPN 3,763,051 to Speigel et al. (hereinafter referred to as Speigel).

Regarding claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54, Speigel discloses a substrate comprising an anode electrode wherein phosphor particles are bonded to the anode electrode by submerging the substrate into a phosphor binder solution, and removing the substrate from the binder solution (see entire document). The applicant admits that the vinyl sheet of Speigel is "immersed" in the binder solution (see page 16, lines 16-17, page 17, lines 4-7, and page 18, line 15, of the amendment filed on 1/24/2005).

Speigel does not specifically mention removing the substrate from the binder at a predetermined rate, but it is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the

product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show obvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). The applied prior art either anticipated or strongly suggested the claimed subject matter. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with the applied prior art.

Regarding claims 18, 23-24, 36-37 and 53-54, Speigel discloses that the substrate may be fired at a temperature between 400 and 500°C (column 2, lines 6-8 and lines 38-41).

Regarding claims 19, 21, 33 and 50, Speigel discloses that the binder solution may comprise potassium silicate and water (paragraph bridging columns 1 and 2).

Regarding claims 25-30, Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating

step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

Claim Rejections - 35 USC § 103

4. Claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh et al. (hereinafter referred to as Dinh).

Regarding claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54, Speigel discloses a substrate comprising an anode electrode wherein phosphor particles are bonded to the anode electrode by submerging the substrate into a phosphor binder solution, and removing the substrate from the binder solution (see entire document).

Speigel is silent with regards to the rate of removal of the substrate from the binder solution, therefore, it would have been obvious to look to the prior art for a teaching concerning take-up speeds. Dinh provides this teaching disclosing that it is known that a coating thickness generally increases with the coating material concentration and with the take-up speed (column 1, lines 37-47 and column 6, lines 14-20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the take-up speed based on the concentration of the coating and based on the desired coating thickness, motivated by the expectation of successfully practicing the invention of Speigel.

Regarding claim 18, 23-24, 36-37 and 53-54, Speigel discloses that the substrate may be fired at a temperature between 400 and 500°C (column 2, lines 6-8 and lines 38-41).

Regarding claims 19, 21, 33 and 50, Speigel discloses that the binder solution may comprise potassium silicate and water (paragraph bridging columns 1 and 2).

Regarding claims 25-30, Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

5. Claims 20, 32 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of USPN 4,293,586 to Unnai et al. (hereinafter referred to as Unnai).

Speigel does not mention a specific potassium silicate weight percentage range. Since Speigel is silent with regards to a specific potassium silicate weight percentage range, it would have been necessary and thus obvious to look to the prior art for conventional potassium silicate weight percentage ranges. Unnai provides this conventional teaching showing that it is known in the art that the adhesive property of a phosphor layer is improved when 0.05 to 0.5 weight percent potassium silicate is utilized (see entire document including column 4, lines 41-57). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use 0.05 to 0.5 weight percent potassium silicate, as taught by Unnai, motivated by the expectation of successfully practicing the invention of Speigel.

6. Claims 20, 32 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of USPN 4,293,586 to Unnai.

Speigel does not mention a specific potassium silicate weight percentage range. Since Speigel is silent with regards to a specific potassium silicate weight percentage range, it would have been necessary and thus obvious to look to the prior art for conventional potassium silicate weight percentage ranges. Unnai provides this conventional teaching showing that it is known in the art that the adhesive property of a phosphor layer is improved when 0.05 to 0.5 weight percent potassium silicate is utilized (see entire document including column 4, lines 41-57). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use 0.05 to 0.5 weight percent potassium silicate, as taught by Unnai, motivated by the expectation of successfully practicing the invention of Speigel.

7. Claims 22, 34 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of USPN 5,723,070 to Kim et al. (hereinafter referred to as Kim).

Speigel discloses that the binder solution may comprise potassium silicate and alcohol (paragraph bridging columns 1 and 2), but Speigel does not specifically mention an organo silicate. Kim discloses that it is known in the display device art that potassium silicate and ethyl silicate (an organo silicate) are functionally equivalent interchangeable binders (see entire document including column 1, line 65 through column 2, line 51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the potassium silicate binder with an ethyl silicate binder, as taught by Kim, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability.

8. Claims 22, 34 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of USPN 5,723,070 to Kim.

Speigel discloses that the binder solution may comprise potassium silicate and alcohol (paragraph bridging columns 1 and 2), but Speigel does not specifically mention an organo silicate. Kim discloses that it is known in the display device art that potassium silicate and ethyl silicate (an organo silicate) are functionally equivalent interchangeable binders (see entire document including column 1, line 65 through column 2, line 51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the potassium silicate binder with an ethyl silicate binder, as taught by Kim, because it has been held to be

within the general skill of a worker in the art to select a known material on the basis of its suitability.

9. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist et al. (hereinafter referred to as Dahlquist), in view of any one of USPN 4,365,184 to Higton et al. (hereinafter referred to as Higton) and USPN 4,983,847 to Bryan et al. (hereinafter referred to as Bryan).

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Speigel does not mention the additional use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Speigel, as taught by each of Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Speigel does not mention the use of an indium nitrate electrolyte, but Higton, and Bryan each disclose that it is known in the art to add an indium nitrate electrolyte to a phosphor binding solution to increase prompt emission, reduce afterglow, and/or increase electroluminescence (see entire document of Higton including column 1, lines 8-40, and see entire document of Bryan including Examples 86-93). It would have been obvious to one having ordinary skill in the art at

the time the invention was made to add an electrolyte to the binder solution of Speigel, as taught by each of Higton, and Bryan, because the electrolyte would increase prompt emission, reduce afterglow, and/or increase electroluminescence.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

10. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of any one of USPN 4,365,184 to Higton, and USPN 4,983,847 to Bryan.

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Speigel does not mention the additional use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Speigel, as taught by each of Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Speigel does not mention the use of an indium nitrate electrolyte, but Higton, and Bryan each disclose that it is known in the art to add an indium nitrate electrolyte to a phosphor binding solution to increase prompt emission, reduce afterglow, and/or increase electroluminescence (see entire document of Higton including column 1, lines 8-40, and see entire document of Bryan including Examples 86-93). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add an electrolyte to the binder solution of Speigel, as taught by each of Higton, and Bryan, because the electrolyte would increase prompt emission, reduce afterglow, and/or increase electroluminescence.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be

accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

11. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of USPN 3,617,743 to Rabatin.

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Speigel does not mention the use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Speigel, as taught by Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Speigel does not mention the use of a cerium nitrate electrolyte, but Rabatin discloses that it is known in the art to add cerium to a phosphor binding solution to increase sensitivity (see entire document of Rabatin including the abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add cerium to the binder solution of Speigel, as taught by each of Rabatin, because the cerium would increase sensitivity.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

12. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of USPN 3,617,743 to Rabatin.

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Speigel does not mention the use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Speigel, as taught by Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection..

Speigel does not mention the use of a cerium nitrate electrolyte, but Rabatin discloses that it is known in the art to add cerium to a phosphor binding solution to increase sensitivity (see entire document of Rabatin including the abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add cerium to the binder solution of Speigel, as taught by each of Rabatin, because the cerium would increase sensitivity.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a

phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

13. Claims 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of USPN 4,365,184 to Higton.

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Speigel does not mention the use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder

solution of Speigel, as taught by Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Speigel does not mention the use of a thorium nitrate electrolyte, but Higton discloses that it is known in the art to add thorium to a phosphor binding solution to increase electroluminescence (see entire document of Higton including column 1, lines 8-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add thorium to the binder solution of Speigel, as taught by Higton, because the thorium would increase electroluminescence.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

14. Claims 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of USPN 4,365,184 to Higton.

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Speigel does not mention the use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Speigel, as taught by Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Speigel does not mention the use of a thorium nitrate electrolyte, but Higton discloses that it is known in the art to add thorium to a phosphor binding solution to increase electroluminescence (see entire document of Higton including column 1, lines 8-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add thorium to the binder solution of Speigel, as taught by Higton, because the thorium would increase electroluminescence.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate

subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

15. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 4,365,184 to Higton, USPN 4,983,847 to Bryan, and USPN 3,617,743 to Rabatin.

Speigel does not mention the use of an electrolyte, but Higton, Bryan and Rabatin each disclose that it is known in the art to add an electrolyte to a phosphor binding solution to increase prompt emission, reduce afterglow, increase electroluminescence and/or increase sensitivity (see entire document of Higton including column 1, lines 8-40, see entire document of Bryan including Examples 86-93, and see entire document of Rabatin including the abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add an electrolyte to the binder solution of Speigel, as taught by each of Higton, Bryan and

Rabatin, because the electrolyte would increase prompt emission, reduce afterglow, increase electroluminescence and/or increase sensitivity.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

16. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 4,365,184 to Higton, USPN 4,983,847 to Bryan, and USPN 3,617,743 to Rabatin.

Speigel does not mention the use of an electrolyte, but Higton, Bryan and Rabatin each disclose that it is known in the art to add an electrolyte to a phosphor binding solution to increase

prompt emission, reduce afterglow, increase electroluminescence and/or increase sensitivity (see entire document of Higton including column 1, lines 8-40, see entire document of Bryan including Examples 86-93, and see entire document of Rabatin including the abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add an electrolyte to the binder solution of Speigel, as taught by each of Higton, Bryan and Rabatin, because the electrolyte would increase prompt emission, reduce afterglow, increase electroluminescence and/or increase sensitivity.

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(12) Response to Argument

Response to Section A of the Appeal Brief

The section cites legal standards, no specific argument is made regarding the current rejections.

Response to Section B of the Appeal Brief

Regarding appellant's argument traversing the 35 U.S.C. 112 rejection of claims 16-37 and 53-54, the 35 U.S.C. 112 rejection of claims 16-37 and 53-54 has been withdrawn based on appellant's argument/admission that "immersing" and "submerging" imply identical rates of immersion and/or submersion.

Response to Section C of the Appeal Brief

The appellant asserts that Speigel does not teach or suggest a phosphor particle bounded substrate because Speigel teaches that a vinyl sheet should be immersed in a phosphor particle binder solution to form a phosphor particle binder coating on the vinyl sheet and then an anode metallic segment is to be coated with the phosphor particle binder coating by pressing the metallic segment on the coated vinyl sheet.

The appellant argues that the phosphor particle binder coating does not contact a substrate until it is transferred to the metallic segment because a vinyl sheet is not a substrate. The examiner respectfully disagrees. A "substrate" is merely an underlying layer (see the cited American Heritage Dictionary definition). The phosphor particle bound vinyl sheet reads on the claimed phosphor particle bounded substrate of at least claim 16.

It is also submitted that the phosphor particle binder coated metallic segment taught by Speigel also reads on the claimed coated substrate and coated anode. The appellant appears to

argue that once the coating is transferred to the anode metallic segment the coating is somehow different from the coating deposited on the vinyl sheet. The examiner respectfully disagrees. Speigel discloses that the method of the invention provides a uniform layer of phosphor on the metallic segment (column 1, lines 13-27) by transferring the coating from the vinyl sheet to the metallic segment (column 2, lines 29-41). There is no teaching or suggestion that the coating changes form when it transfers to the metallic segment. The applicant has failed to show, or attempt to show, that the coating on the metallic segment is patentably distinct from claimed coated substrate and/or coated anode.

It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show obvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). The applied prior art either anticipated or strongly suggested the claimed subject matter.

The appellant asserts that the article taught by Speigel does not read on the currently claimed article because Speigel does not teach or suggest removing the substrate from the binder solution at a predetermined rate (product by process limitation). The examiner respectfully disagrees. Although Speigel does not specifically mention removing the substrate from the

binder solution at a rate that was predetermined, Speigel clearly discloses that the substrate is eventually removed from the binder solution. Regardless of whether the rate of removal was determined ahead of time or not, the article is still removed at some rate.

The appellant also argues that immersion of a substrate at a predetermine rate results in a stronger bond. The examiner respectfully disagrees. Regardless of whether the substrate was removed at a predetermined rate of X inches/minute or at a non-predetermined rate of X inches/minute, the substrate is still removed at the same rate and the articles would be identical. It is noted that the appellant does not claim a specific rate of removal, rather, the appellant simply claims that some sort of rate was used and that the rate was predetermined.

The appellant asserts that the phosphor particle binder coating is not bonded to the vinyl sheet because the coating is eventually transferred to a metallic segment. The appellant appears to be arguing that because the coating can be transferred from the vinyl sheet to another substrate, the coating must have never been bonded to the vinyl sheet. The examiner respectfully disagrees. If no bond existed between the coating and the vinyl sheet then the coating would completely drain off the vinyl sheet as it was removed from the binder solution. The appellant appears to be arguing that the coating was never bonded to the vinyl sheet simply because the bond between the metallic segment and the coating may be stronger than the bond between the coating and the vinyl sheet. The examiner respectfully disagrees. The appellant does not claim a specific bond strength. Regardless of whether the coating is capable of bonding stronger to another substrate, the coating is still bonded to the vinyl sheet.

Response to Section D of the Appeal Brief

The appellant asserts that there is no motivation to combine and/or modify the teaching of Speigel with the teachings of Dinh, because Speigel does not teach that any particular phosphor particle binder coating thickness is desirable. The examiner respectfully disagrees. Speigel specifically discloses that one of the problems with prior art coating techniques is that the thickness of the coating cannot be controlled (column 1, lines 13-23). Speigel is clearly concerned with the thickness of the coating. Since Speigel is silent with regards to the rate of removal of the substrate from the binder solution it would have been obvious to look to the prior art for a teaching concerning take-up speeds. Dinh provides this teaching disclosing that it is known that a coating thickness generally increases with the coating material concentration and with the take-up speed (column 1, lines 37-47 and column 6, lines 14-20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to predetermine a take-up speed based on the concentration of the coating and based on the desired coating thickness, motivated by the expectation of successfully practicing the invention of Speigel.

Response to Section E of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section F of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section G of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section H of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section I of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section J of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section K of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section L of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section M of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section N of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section O of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

Response to Section P of the Appeal Brief

The appellant refers back to previous arguments. The appellant fails to set forth a separate argument against the cited rejection.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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PATENT EXAMINER

atp
July 28, 2005

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